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Support for AppleWorks and ///EZ Pieces Users

Working with Relational (3-D) Spreadsheets

by Will Nelken

The AppleWorks spreadsheet provides long appreciated number-crunching power in two dimensions – columns and rows. New spreadsheet functions make AppleWorks 4 even more powerful than its predecessors. Moreover, AppleWorks 4's relational capabilities add an important third dimension to spreadsheet computing. This month you will learn how to use AppleWorks 4's relational features to link spreadsheets with other spreadsheets and with your data base files.

AppleWorks 4 gives you two ways to share spreadsheet data with other AppleWorks files. One approach uses the AppleWorks clipboard; the second uses special dynamic memory “links” that are new to AppleWorks 4.

Using the Clipboard

You probably know that the AppleWorks clipboard lets you share data between data base, spreadsheet, and word processor files. *[Ed: AppleWorks 2.x requires TimeOut Data Converter to transfer data between modules. This feature was built into AppleWorks 3.0 and AppleWorks 4.]*

AppleWorks 4 offers three separate clipboards (one for each module) each of which lets you append, edit, and transfer data between modules.

Spreadsheet <—> Word Processor

The clipboard makes it easy to transfer spreadsheet data into a word processor file. Copy or move the data onto the clipboard and AppleWorks automatically inserts tabs between the columns of data. You can then copy or move the data from the clipboard into a word processor file and set tabs to re-create

Figure 1: Spreadsheet Gradebook

File: Gradebook										REVIEW/ADD/CHANGE										Escape: Main Menu									
=====A=====BC=D=E===F===G==H=I=J=K===L===M==N=O=P=Q===R===S==T=U=V==W==																													
1	Student Name	FI	A	B	C	1st	A	B	C	2nd	A	B	C	3rd	Final														
2	=====															=====													
3	Archibald	N	91	94	88	91	86	88	93	89	88	87	95	90	90.0														
4	Carlsen	S	98	96	98	97	96	99	94	96	94	92	99	95	96.2														
5	Davis	C	86	82	90	86	88	92	86	89	90	90	92	91	88.4														
6	Henderson	M	80	84	81	82	80	80	82	81	84	85	86	85	82.4														
7	Nelsen	S	95	89	99	94	96	91	95	94	92	98	97	96	94.7														
8	Russell	K	80	78	76	78	74	78	80	77	71	73	76	73	76.2														
9	Taafe	S	100	92	92	95	93	90	95	93	94	96	98	96	94.4														
10																													
11																													
12																													
13																													
14																													
15																													
16																													

A1: (Width:13, Label, Layout-L)

Student Name

Type entry or use ⌘ commands

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the structure of the original spreadsheet.

You can also transfer your data by “printing” a spreadsheet “to the clipboard for the word processor”. AppleWorks will insert spaces instead of tabs between the “printed” columns, thus maintaining the visual appearance (“image”, in AppleWorks 4 terminology) of the information as it appeared on the spreadsheet screen.

To decide whether to copy or print to the clipboard, think of how you will use the data that you transfer into the word processor. If you want an exact image of the contents of your spreadsheet, you should print to the clipboard. If you want a more flexible arrangement of the columns of spreadsheet data, you should copy your data to the clipboard.

Spreadsheet <—> Data Base

You can also use the clipboard to transfer spreadsheet data to a data base file. Each spreadsheet col-

Figure 2: Student Data Base

File: StudentDB REVIEW/ADD/CHANGE Escape: Main Menu
Record 1 of 7 (7 selected)
Selection: All records

LName	FName	First	Second	Third	FINAL	Phone
Archibald	Nick	-	-	-	-	435-9821
Carlsen	Stewart	-	-	-	-	437-0032
Davis	Chris	-	-	-	-	435-4675
Henderson	Mike	-	-	-	-	438-2459
Nelsen	Svenya	-	-	-	-	435-1397
Russell	Kyle	-	-	-	-	506-3324
Taafe	Sara	-	-	-	-	437-7823

Type entry or use ⌘ commands

01/08/94 11:11 am

umn becomes a data base category; each row becomes a record (just remember: “C’s” for Columns and Categories and “R’s” for Rows and Records). The AppleWorks 4 data base limit of sixty categories per record limits the transfer to no more than sixty columns of spreadsheet information, which is adequate for most applications.

Follow these steps to use the clipboard to transfer spreadsheet data into a data base file:

1. With the spreadsheet on your screen, press Apple-C, select “To clipboard”, and highlight the rows, columns, or block of cells you want to transfer to the data base file.
2. Switch to the data base, display its data in multiple record layout, and copy or move the spreadsheet data from the clipboard.

Reverse this process and you can use the clipboard to transfer data base records into a spreadsheet.

Spreadsheet to Data Base Linkages

AppleWorks 4’s data base module can also “import” data from any spreadsheet file on the desktop or on a disk. This is a dynamic “memory link” that you define within the data base file. AppleWorks will automatically import from the spreadsheet and update the data base each time you press <⌘-K>.

It is difficult to overstate the potential for these linkages; they let you create a linked invoice spreadsheet and customer data base, a linked spreadsheet gradebook and student data file, and

full-featured automated business accounting packages.

Consider the gradebook and student data base example. *Figure 1* contains a simple spreadsheet that averages three test grades each semester and three semester grades for a year-end final grade. *Figure 2* depicts a linked data base that contains student information and categories for the semester and final grades.

Creating Linked Spreadsheet / Data Base Files

Let’s use AppleWorks 4’s data base import feature to set up “rules” that link

the data base to the summary information in the gradebook. The rules will tell AppleWorks to automatically import the gradebook data without using the clipboard.

Start by creating the “Gradebook” spreadsheet in *Figure 1* and the “StudentDB” data base in *Figure 2*. (Do not bother with the vertical lines and other formatting niceties I added to the spreadsheet.)

Now you will define the data base “rules” that tell AppleWorks to import the spreadsheet data. Follow these steps:

1. Check that both the Gradebook spreadsheet and the StudentDB data base are on the AppleWorks desktop. (Both files must be on the desktop when you define the rules linking the files.)
2. Display the StudentDB data base on your screen in multiple record layout with the cursor on the “First” (semester) category and press <⌘-O> to access the data base Options Menu.
3. Select “1. Modify rules”, then “5. Import”.
4. Choose “Gradebook (SS)” as the import file. AppleWorks will display the Modify Rules screen in *Figure 3*.
5. Change “3. and import from” to tell AppleWorks to import from column I (or whichever column contains the “1st” data in your spreadsheet, see *Figure 1*), and change “6. Update during ⌘-K recalc” to “Yes”.

Figure 3: Import Rules Screen

```

File: StudentDB          MODIFY RULES          Escape: Options
Category: First
Rules: Import from file "Gradebook" Rows 1 thru the end
      Find a match for [LName] in
      column A and import from column B
=====
Choose item to change:
1. Find a match for      [LName] StudentDB
2. In                   column A Gradebook
3. and import from      column B Gradebook
4. Rows                 1 thru the end
5. File                 Gradebook
6. Update during ⌘-K recal No
=====
Type number, or use arrows, then press Return          3823K Avail.
    
```

Figure 4: Imported Grades (One Record)

```

File: StudentDB          REVIEW/ADD/CHANGE          Escape: Main Menu
Record 1 of 7 (7 selected)
Selection: All records
=====
LName      FName      First  Second  Third  FINAL  Phone
=====
Archibald  Nick      91     89     90     90.0   435-9821
Carlsen    Stewart   -      -      -      -      437-0032
Davis      Chris     -      -      -      -      435-4675
Henderson  Mike      -      -      -      -      438-2459
Nelsen     Svenya   -      -      -      -      435-1397
Russell    Kyle      -      -      -      -      506-3324
Taafe      Sara      -      -      -      -      437-7823
=====
Type entry or use ⌘ commands          01/08/94 12:51 pm
    
```

- Press the Escape Key to return to the Options Menu. The upper left-hand corner of the screen displays the rules for the "First" category.
- Press the Tab Key and note that no rules are set for the "Second" category.
- Repeat steps #3 through #7 for the "Second", "Third", and "Final" categories, changing "3. and import from" to the spreadsheet columns that contain your "2nd", "3rd", and "Final" data respectively. (Those are columns O, U, and W in Figure 1).

Your StudentDB file will appear unchanged (as in Figure 2), but moving the cursor to any one of the grade categories should reveal the rule description, "Import", at the bottom of the screen.

- To test the import feature, put the cursor on any category in Record #1 and press <oa-K>. A menubar will appear at the bottom of the screen offering these options:

```

Recalculate? This record  Range of records
                        Active records Entire file
    
```

"This record" calculates only the record that contains the cursor.

"Range of records" prompts you to define the range of records that you want to recalculate.

"Active records" recalculates only those records displayed under the current record selection rules.

"Entire file" recalculates every record in the data base file.

Press "T" to recalculate only Record #1. AppleWorks will import the data; your screen should look like the example in Figure 4.

Importing from a Disk

Once you define the import rules, the spreadsheet from which you will import data (the Gradebook spreadsheet, in our example) can be on any one of the three desktops or on a disk. If it is on a disk, you must either (a) set the disk as the

current path, or (b) designate a category in the data base file and enter the full pathname to the linked file in that category in every record. Entering the pathname in a designated data base category lets you import data without first adding the specified file to the AppleWorks desktop.

Let's try both approaches. Follow these steps to tell AppleWorks to import data from a file in the current path (AppleWorks displays the current path in the upper left corner of the Main Menu screen):

- With the cursor on any category in the StudentDB file, press <oa-O> to display the Options Menu.
- Choose "6. Set preferences" and then change "6. Import from disk" to "Yes".

Now you do not need the import file on the desktop. AppleWorks will check the desktops for the file. If it does not find the file on the desktops, AppleWorks will search the current path for the file and will display an error message if it does not find the file in either location.

Let's test this linkage. Follow these steps:

1. Press <oa-Q>, switch to the Gradebook spreadsheet, and press <oa-S> to store the Gradebook in the current path.
2. Remove the Gradebook from the desktop.
3. Display the StudentDB data base in multiple record layout.
4. Put the cursor in Record #2 and press <oa-K>. Then press the letter R. AppleWorks will highlight Record #2 as the beginning of the "range".
5. Press the Down Arrow Key twice to include Records #2 through #4, then press the Return Key to accept the highlighted range. AppleWorks will access the Gradebook file on your disk.

Your screen should now look like the example in *Figure 5*.

Defining Other Paths

As indicated earlier, you can also define links to files that are not in the current path. To do that, you add a category to the data base file and enter the full pathname to the linked file in that category in every record.

Try this example that has you add a "File" category to the data base and enter the pathname to the Gradebook spreadsheet in that category for every student. When you press <oa-K>, AppleWorks 4 will find the Gradebook file on your disk and update the students' data base records.

Follow these steps:

1. If you have not set the StudentDB to "Import from disk", repeat steps #1 and #2 under "Importing from a Disk" on page 4.

Figure 5: Imported Grades (Four Records)

File: StudentDB		REVIEW/ADD/CHANGE				Escape: Main Menu
Record 1 of 7 (7 selected)						
Selection: All records						
LName	FName	First	Second	Third	FINAL	Phone
Archibald	Nick	91	89	90	90.0	435-9821
Carlsen	Stewart	97	96	95	96.2	437-0032
Davis	Chris	86	89	91	88.4	435-4675
Henderson	Mike	82	81	85	82.4	438-2459
Nelsen	Svenya	-	-	-	-	435-1397
Russell	Kyle	-	-	-	-	506-3324
Taafe	Sara	-	-	-	-	437-7823

Type entry or use ⌘ commands 01/08/94 12:52 pm

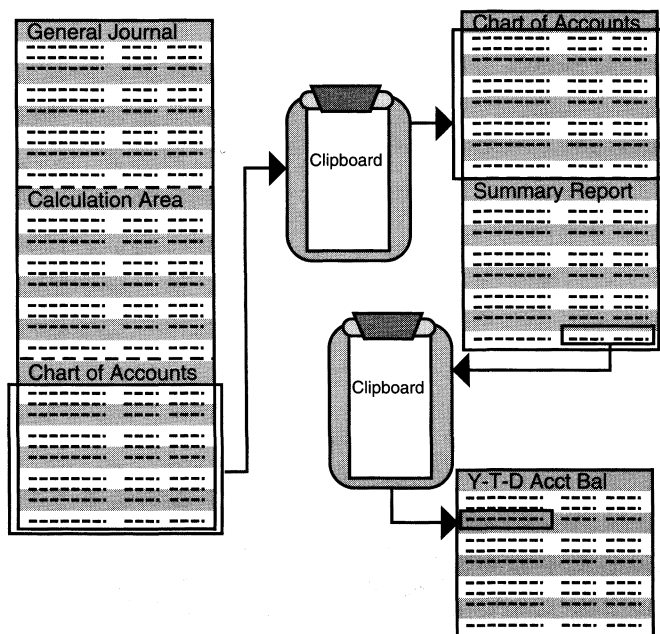
Figure 6: Imported Grades

File: StudentDB		REVIEW/ADD/CHANGE				Escape: Main Menu
Record 1 of 7 (7 selected)						
Selection: All records						
LName	FName	First	Second	Third	FINAL	Phone
Archibald	Nick	91	89	90	90.0	435-9821
Carlsen	Stewart	97	96	95	96.2	437-0032
Davis	Chris	86	89	91	88.4	435-4675
Henderson	Mike	82	81	85	82.4	438-2459
Nelsen	Svenya	94	94	96	94.7	435-1397
Russell	Kyle	78	77	73	76.2	506-3324
Taafe	Sara	95	93	96	94.4	437-7823

Type entry or use ⌘ commands 01/08/94 12:53 pm

2. Press <oa-N> and add a category called "File" to the StudentDB file. Then press the Escape Key.
3. Press <oa-L> and press the Return Key to accept "Change the existing record layout".
4. Press the Tab Key to move the cursor past the "Phone" category. Then press <oa-I> and insert the "File" category.
5. Expand the "File" category until it is wide enough to accommodate the complete pathname to your Gradebook file (including the file name).
6. Press the Escape Key twice to return to multiple record layout.

Figure 7: Bookkeeping Copy Process (AW 3.0)

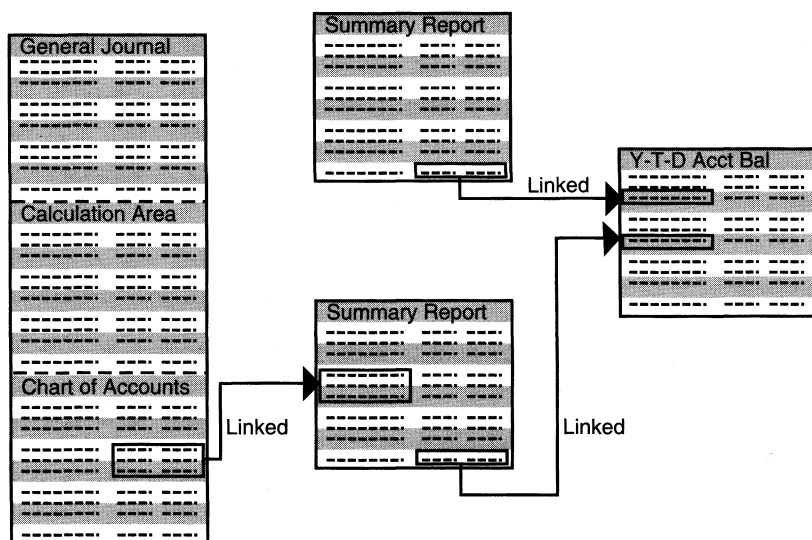


File category in Record #2, and press <oa-'>. AppleWorks will copy the contents of the File category in Record #1 into Record #2 and will move the cursor to Record #3. Hold down <oa-'> and AppleWorks will copy the entry into every record.)

Now you will tell AppleWorks to use the pathname you entered into the File category. Continue as follows to define the new import rules:

9. Return to the Main Menu and load the Gradebook spreadsheet back on your desktop. The file must be on the desktop when you define import rules that "point" to the file.
10. Switch to the StudentDB file. Confirm that the cursor is in the File category and press <oa-O>. Choose "1. Modify rules", and "5. Import".

Figure 8: Bookkeeping Import Process (AW 4)



11. Press the Return Key to indicate that you want to import from the Gradebook file.

12. Choose "5. File". A menubar will appear with two options:

Import from? One file File name in a category

"One file" lets you select an import file from the desktop.

"File name in a category" lets you specify the pathname in a category of the current data base file. Conceivably, you could import data from a different file for every record!

13. Select "File name in a category".

AppleWorks will display a list of the categories in this data base; choose the category "File", which contains the pathname.

Now you will test this feature. Continue as follows:

14. Delete the Gradebook file from your desktop(s) and change the current path to any path that does *not* include the Gradebook.

With the StudentDB file on your screen, press <oa-K>. Then press the letter E. The data base

7. Return to Record #1 and put the cursor in the File category. Enter the full pathname to the Gradebook file (assuming you have a hard disk, use a path such as /HD1/SCHOOL/GRADEBOOK). Then press the Return Key.
8. Use the Ditto Command (<oa-'>) to copy the pathname to the File category in every record. (To use the Ditto Command, display the records in multiple record layout, put the cursor in the

will read the location of the import file (Gradebook) from the File category in each record and will import the data into the appropriate categories (see Figure 6). [Ed: Be patient if you store data on a floppy disk. The import process requires numerous disk accesses.]

Linking Spreadsheets

AppleWorks 4 also lets you create "linked spreadsheets" that read data and formulas from cells in other spreadsheets.

For example, I regularly use a large (200K) general ledger spreadsheet for double-entry bookkeeping. The top section contains my journal entries, the middle section performs temporary calculations, and the bottom section contains a summary chart of accounts. I use this same chart of accounts in another spreadsheet that provides monthly summary account income and balance reports. Finally, I use those reports in still another file to provide month by month summaries.

Of course, I could incorporate all these functions in a single spreadsheet, but its size would make it unwieldy and its recalculations too slow.

Under AppleWorks 3.0, I used the clipboard to copy the monthly chart of accounts to that month's report file. Then, each month I copied some cells from the recalculated report files to the year-to-date account summary file (see Figure 7). AppleWorks' powerful clipboard made the transfers easy. But each time I made revisions, I had to repeat the entire copying process.

AppleWorks 4 lets me link the summary cells in the report file to the original ledger file. It also lets me link the year-to-date form to the monthly summary reports. These linkages eliminate the need for two charts of accounts and the copying that I had to do between spreadsheets. I simply recalculate the summary files once each month. If I revise the gen-

eral ledger, I only need to recalculate the summary files (see Figure 8).

A Second Tutorial: Linked Spreadsheets

Now let's create two linked spreadsheets; a spreadsheet that produces a monthly summary report (see Figure 9) and the year-to-date account summary in Figure 10.

Figure 9: Monthly Summary Report

File: Summary.Rpt.Dec	REVIEW/ADD/CHANGE		Escape: Main Menu
=====A=====	B=====	C=====	D=====E=====F=====
1 December 1993	Revenue	Expense	Balance
2 =====	=====	=====	=====
3 Property (rent/maintain)	7740.00	1275.00	6465.00
4 Extension	9321.45	8542.00	779.45
5 Miscellaneous	3145.60	1005.63	2139.97
6 Utilities		654.92	-654.92
7 Salaries		9332.67	-9332.67
8 Other accounts	4390.79	1253.80	3136.99
9 -----	-----	-----	-----
10 General Operations	24597.84	22064.02	2533.82
11 -----	-----	-----	-----
12 Tuition	7025.65		7025.65
13 Fundraising	310.00	14.75	295.25
14 Miscellaneous	240.50	485.00	-244.50
15 Salaries		4879.92	-4879.92
16 Other accounts	1100.10	2038.78	-938.68
17 -----	-----	-----	-----
18 School Operations	8676.25	7418.45	1257.80

A1: (Width:25, Label)			
December 1993			
Type entry or use ⌘ commands			01/08/94 4:48 pm

Figure 10: Year-to-Date Account Summary

File: GO.Acct.Summary	REVIEW/ADD/CHANGE		Escape: Main Menu
=====A=====	B=====	C=====	D=====E=====F=====G=====
1	Revenue	Expenses	Balance
2			
3 Beginning balance	11273.29		
4 January			
5 February			
6 March			
7 April			
8 May			
9 June			
10 July			
11 August			
12 September			
13 October			
14 November			
15 December	24597.84	22064.02	2533.82
16 -----	-----	-----	-----
17 Grand totals	35871.13	22064.02	13807.11
18 -----	-----	-----	-----
A1: (Width:20)			
Type entry or use ⌘ commands			01/08/94 5:25 pm

Figure 11: Y-T-D Account Summary File

```
File: GO.Acct.Summary          REVIEW/ADD/CHANGE          Escape: Main Menu
=====A=====B=====C=====D=====E=====F=====G=====
1|                               Revenue                Expenses                Balance
2|
3|   Beginning balance
4|       January
5|       February
6|       March
7|       April
8|       May
9|       June
10|      July
11|      August
12|     September
13|     October
14|     November
15|     December
16|                               -----
17|   Grand totals                0.00                0.00                0.00
18|
-----
A1: (Width:20)
Type entry or use ␣ commands                                01/08/94  5:23 pm
```

3. Set the standard Value Format to "Fixed" with two decimal places.
4. Set the standard Label Format to "Right Justify".
5. Set recalculation to "Manual".
6. Enter the labels shown in *Figure 11*.
7. Enter the following formulas:
C17: @SUM(C2...C16)
E17: @SUM(E2...E16)
G17: @SUM(G2...G16)
8. Enter a beginning balance of 11273.29 in cell C3.

Now you will enter references that tell AppleWorks how to import the data from the monthly spreadsheet. You can use direct or indirect references. To establish a direct reference to a cell or range of

Follow these steps to create the monthly summary report spreadsheet:

1. Create a new spreadsheet file called "Summary.Rpt.Dec".
2. Widen column A to 25 characters.
3. Press <oa-V> and set the standard Value Format to "Fixed" with two decimal places.
4. In cell F3 enter the formula +B3-D3.
5. Copy the formula from cell F3 into cells F4 through F8, F10, F12 through F16, and F18. Make all references "Relative".
6. Enter the following formulas:
B10: @SUM(B2...B9)
D10: @SUM(D2...D9)
B18: @SUM(B11...B17)
D18: @SUM(D11...D17)
7. Enter the labels and data in *Figure 9* and press <oa-K>.

Now you will create the year-to-date account summary template. Follow these steps:

1. Create a new spreadsheet file called "GO.Acct.Summary".
2. Widen column A to 20 characters.

cells in another file, you enter a formula such as ("OtherFileName":A14) in the cell that you want to gather the data. When you press <oa-K>, AppleWorks will import the data from cell A14 in a spreadsheet named "OtherFileName".

You must enclose the reference in parentheses. The first element is the filename of the import file, followed by a colon, followed by the cell or range of cells from which to import data.

To establish an indirect reference, you enter the import file's name in a cell and refer to that cell in the link format, for example (H4:A14), where H4 contains the import filename.

Let's use the indirect method in our example. I will assume that you named each month's summary report with the abbreviation of that month at the end of the filename, as in "Summary.Rpt.Dec".

Continue by creating the cell links as follows:

9. Widen column H to 15 characters (the legal limit of a ProDOS filename) and enter the following labels:

H4: Summary.Rpt.Jan
H5: Summary.Rpt.Feb
H6: Summary.Rpt.Mar
H7: Summary.Rpt.Apr
H8: Summary.Rpt.May
H9: Summary.Rpt.Jun

H10: Summary.Rpt.Jul
H11: Summary.Rpt.Aug
H12: Summary.Rpt.Sep
H13: Summary.Rpt.Oct
H14: Summary.Rpt.Nov
H15: Summary.Rpt.Dec

The formulas in the report will refer to these cell labels for the necessary import filenames.

10. Complete the spreadsheet by entering the following formulas:

C4: (H4:B10)
E4: (H4:D10)
G4: (H4:F10)

Now you will copy those references to the remainder of the columns. Continue as follows:

11. Copy cells C4 through G4 "Within Worksheet" into cells C5 through G15. Make all references to column H "Relative" and all other references "No change".

Here is the step-by-step procedure:

- Put the cursor in cell C4, press <oa-C>, and choose "Within worksheet".
- Press <oa-right arrow> to highlight the rest of the row as the "source" and press the Return Key.
- Press the Down Arrow Key once (moving the cursor bar to cell C5), and press the Period Key.
- Use the Down Arrow Key to highlight through row 15 as the destination range and press the Return Key to accept the range.
- Press R, N, R, N, R, N in response to the "No Change / Relative" question.

The cells should contain the formulas in Figure 12.

Now you will test the cell links as follows:

12. Confirm that the file Summary.Rpt.Dec is on one of the three desktops (unlike data base imports, spreadsheet imports require that your linked files be on the desktop). Go to the GO.Acct.Summary file and press <oa-K>.

Ignore the warning message that appears on your screen. AppleWorks 4 is telling you that it

Figure 12: Formulas that Import Data

C4: (H4:B10)	E4: (H4:D10)	G4: (H4:F10)
C5: (H5:B10)	E5: (H5:D10)	G5: (H5:F10)
C6: (H6:B10)	E6: (H6:D10)	G6: (H6:F10)
C7: (H7:B10)	E7: (H7:D10)	G7: (H7:F10)
C8: (H8:B10)	E8: (H8:D10)	G8: (H8:F10)
C9: (H9:B10)	E9: (H9:D10)	G9: (H9:F10)
C10: (H10:B10)	E10: (H10:D10)	G10: (H10:F10)
C11: (H11:B10)	E11: (H11:D10)	G11: (H11:F10)
C12: (H12:B10)	E12: (H12:D10)	G12: (H12:F10)
C13: (H13:B10)	E13: (H13:D10)	G13: (H13:F10)
C14: (H14:B10)	E14: (H14:D10)	G14: (H14:F10)
C15: (H15:B10)	E15: (H15:D10)	G15: (H15:F10)

cannot find all the import files on the desktops. Press the Space Bar. Your screen should look like the example in Figure 10.

Row 15 (which is the only row that refers to the file Summary.Rpt.Dec) will import the data from the import file. The other rows will remain empty until you add files with the appropriate names to the desktop and recalculate your GO.Acct.Summary spreadsheet.

One final note: File name references can identify only a single cell or range of cells and may need to be repeated in a formula. For example, in the formula (H4:A1+B1+C1) only A1 is taken from a linked file. To take all three cells from a linked file you must enter (H4:A1)+(H4:B1)+(H4:C1).

Conclusion

You now know how to create dynamic links between spreadsheet files and data base files or other spreadsheets. Next month we will examine how to use AppleWorks 4's UltraMacros player and the default (pre-installed) macros.

[Will Nelken, who is the pastor of a church in San Rafael, California, and a NAUG Members Helping Members volunteer, is Associate Editor of TimeOut Central, and is the author of Ultra – to the Max!, a comprehensive tutorial for TimeOut UltraMacros 4.x.]

[Working copies of the templates described in this article appear on this month's issue of NAUG on Disk which costs \$10 from NAUG. NAUG on Disk requires a 3.5-inch disk drive; the templates require AppleWorks 4.x.]

How to Print Meaningful Category Names in Reports

by Richard Melpignano

AppleWorks automatically prints your category names at the top of every page of a data base tables format report. Unfortunately, the category names that are so meaningful to you may be indecipherable to the people who read your reports. A reader can probably figure out what the "FNAME" category contains. But a category entitled "MO" will cause some confusion.

This article describes how you can print meaningful category names at the top of each page in your reports. Your final report will look like the example in *Figure 1*. This method works with all versions of AppleWorks.

The trick is to use the Apple-N command to insert a row of meaningful category names in the "Title" line at the top of your report. AppleWorks will print the text that you enter in the Title line on each page of the report.

AppleWorks accepts up to 78 characters in a title, so you must divide wider reports into two or more parts. You then print the parts separately and tape them together.

A Tutorial

The easiest way to learn the procedure is to create a sample data base and generate a report. Follow these steps:

1. Create a new data base called UNIT OWNERS. The data base will contain information for a fictitious condominium owners association.
2. Create the following categories: FNAME, LNAME, ADD, CITY, STATE, ZIP, TEL, UNIT, MO, and YRLY. "UNIT" is the apartment number of the condominium. "MO" is the monthly maintenance assessment for the unit. "YRLY" is the annual maintenance reserve paid by that unit.
3. Create two records that contain the data in *Figure 2*.

Adding "Sensible" Category Names

Next, you will create two tables format reports that will print a list of the records in the file. You will tape the printouts together after you print the reports.

Figure 1: Sample Report with Category Names

FName	LName	Address	City	State	Zip	Telephone	Unit #	Monthly \$	Yearly \$
John	Adams	123 Government Way	Quincy	MA	04890	(617) 555-1111	12	162.00	280.00
John Q.	Adams	123 Government Way	Quincy	MA	04890	(617) 555-6666	8	162.00	280.00
Thomas	Jefferson	16 Beacon Street	Philadelphia	PA	23456	(215) 555-1212	9	162.00	280.00
James	Madison	999 Dolly Street	Montpelier	VA	38922	(703) 555-9876	11	156.00	225.00
James	Monroe	555 Wayside Drive	Richmond	VA	35000	(703) 555-4444	10	180.00	310.00
George	Washington	32 Mount Vernon Way	Mount Vernon	VA	34999	(703) 555-1212	16	156.00	225.00

Data Base Tips...

Follow these steps to create the first report:

1. Press Apple-P and create a new tables format report "From scratch". Name the report "DIRECTORY".
2. Adjust the column widths to display all the data in each category.
Your Report Format screen should look like the example in *Figure 3*.
3. Press Apple-N, move the cursor to the end of the report name, and type "1" to change the report name to "DIRECTORY1". Then press the Return Key.

The cursor will jump to the blank "Title" line above the category names. You can use this line to enter descriptive text of any kind, including common sense category names like the examples in *Figure 4*. Continue as follows:

4. Enter the column labels in *Figure 4*. Use the Space Bar and the Delete Key to control the spacing between the labels. Then press the Return Key.

AppleWorks limits your line of text to the width of the screen, so you can only enter category names for the categories that fit across the screen. Later you will create a second report that prints the categories that do not fit on your screen. For now, continue as follows:

5. Press Apple-O, type "PH", and press the Return Key to delete the header from the report.
6. Type "DS" and press the Return Key to double space each record in the report. Double-spaced reports are usually easier to read.

Creating the Second Report

Follow these steps to create a second report that will print the remaining categories:

Figure 2: Data for the File

	Record #1	Record #2
FNAME	George	Thomas
LNAME	Washington	Jefferson
ADD	32 Mount Vernon Way	16 Beacon St.
CITY	Mount Vernon	Philadelphia
STATE	VA	PA
ZIP	34999	23456
TEL	(703) 555-1212	(215) 555-1212
UNIT	16	9
MO	156	162
YRLY	225	280

Figure 3: Sample Report Format Screen

```

File: UNIT OWNERS                                REPORT FORMAT                                Escape: Report Menu
Report: DIRECTORY
Selection: All records

=====
--> or <-- Move cursor                                ␣-J Right justify this category
> ␣ < Switch category positions                        ␣-K Define a calculated category
--> ␣ <-- Change column width                        ␣-N Change report name and/or title
␣-A Arrange (sort) on this category                  ␣-O Printer options
␣-D Delete this category                             ␣-P Print the report
␣-G Add/remove group totals                          ␣-R Change record selection rules
␣-I Insert a prev. deleted category                  ␣-T Add/remove category totals
=====

FNAME      LNAME      ADD      CITY      STATE  ZIP      TEL
-A-----  -B-----  -C-----  -D-----  -E---  -F---  -G-----
George     Washington  32 Mount Vernon Way  Mount Vernon  VA      34999  (703) 555-1
Thomas     Jefferson   16 Beacon St.        Philadelphia   PA      23456  (215) 555-1

-----More----->
Use options shown above to change report format                                3228K Avail

```

1. Press the Escape Key twice to return to the Report Menu.
2. Select "Duplicate an existing format". Choose DIRECTORY1 and name the new format DIRECTORY2.
3. Use the Apple-D command to delete the categories you included in DIRECTORY1. Your screen should look like the example in *Figure 5*.

Now you will right justify the numbers in the "UNIT", "MO", and "YRLY" columns and widen those columns to accept longer labels. Continue as follows:

4. With the cursor on the UNIT column, press Apple-J, specify zero decimal places and one blank space after the column.

Figure 4: New Category Titles

```

File: UNIT OWNERS          CHANGE NAME          Escape: Erase entry
Report: DIRECTORY1
Selection: All records

=====
--> or <-- Move cursor          ⌘-J Right justify this category
> ⌘ < Switch category positions ⌘-K Define a calculated category
--> ⌘ <-- Change column width  ⌘-N Change report name and/or title
⌘-A Arrange (sort) on this category ⌘-O Printer options
⌘-D Delete this category          ⌘-P Print the report
⌘-G Add/remove group totals      ⌘-R Change record selection rules
⌘-I Insert a prev. deleted category ⌘-T Add/remove category totals

=====
FName      LName      Address      City      State Zip Telephone
FNAME      LNAME      ADD          CITY      STATE ZIP TEL
-A----- -B----- -C----- -D----- -E--- -F--- -G-----
George Washington 32 Mount Vernon Way Mount Vernon VA 34999 (703) 555-
Thomas Jefferson 16 Beacon St. Philadelphia PA 23456 (215) 555-

-----More----->
Type title line at cursor position 3224K Avail
  
```

Figure 5: Second Report Categories

```

File: UNIT OWNERS          REPORT FORMAT          Escape: Report Menu
Report: DIRECTORY2
Selection: All records

=====
--> or <-- Move cursor          ⌘-J Right justify this category
> ⌘ < Switch category positions ⌘-K Define a calculated category
--> ⌘ <-- Change column width  ⌘-N Change report name and/or title
⌘-A Arrange (sort) on this category ⌘-O Printer options
⌘-D Delete this category          ⌘-P Print the report
⌘-G Add/remove group totals      ⌘-R Change record selection rules
⌘-I Insert a prev. deleted category ⌘-T Add/remove category totals

=====
FName      LName      Address      City      State Zip Telephone
UNIT MO      YRLY      L
-A-- -B----- -C----- n
16 156 225 2
9 162 280 4

-----
Use options shown above to change report format 3215K Avail
  
```

- Repeat step #4 for the MO and YRLY columns but specify two decimal places for each of these columns.
- Make the UNIT column six characters wide.
- Make the MO and YRLY columns ten characters wide.
- Press Apple-N and the Return Key. Press Apple-Y to “yank” the line of text with the category names left over from DIRECTORY1.

- Use the example in *Figure 6* to type new category names for the categories on the screen.

Deleting Unwanted Categories

Next, you will delete the extra categories from the DIRECTORY1 report. Follow these steps:

- Press the Escape Key to return to the Report Menu. Choose “Get a report format” and select DIRECTORY1 from the Report Menu.
- Use the Tab Key to scroll to the right and use Apple-D to delete all the categories that fall outside the original viewing area. Then press Apple-Tab to re-display the FNAME category.

Fine-Tuning the Reports

Preview the DIRECTORY1 and DIRECTORY2 reports by printing each to the screen. The new category names will appear at the top of the preview screen.

You can enhance your reports by adding a blank line between the category names and the first data base record. To add the line, insert a blank record in your data base and arrange the records alphabetically on the LNAME category. That inserts a blank record at the top of the list, which adds a space between the data base headings and the information. *[Ed: The blank line only appears on the first page of multi-page reports.]*

Experiment with other settings on the Options Menu. Then print and tape together both the DIRECTORY1 and DIRECTORY2 reports to create the Unit Owners directory in *Figure 1*.

Handling Additional Categories

If your data base has too many categories to fit in two reports, repeat the steps under “Creating the Second Report” as often as necessary to accom-

Figure 6: New Category Names

```

File: UNIT OWNERS          CHANGE NAME      Escape: Restore former entry
Report: DIRECTORY2
Selection: All records

=====
--> or <-- Move cursor          ⌘-J Right justify this category
> ⌘ < Switch category positions ⌘-K Define a calculated category
--> ⌘ <-- Change column width  ⌘-N Change report name and/or title
⌘-A Arrange (sort) on this category ⌘-O Printer options
⌘-D Delete this category          ⌘-P Print the report
⌘-G Add/remove group totals      ⌘-R Change record selection rules
⌘-I Insert a prev. deleted category ⌘-T Add/remove category totals
=====

Unit # Monthly $   Yearly $
UNIT  MO          YRLY   L
-A---- -B----- -C----- n
999999 9999999.99 9999999.99 2
999999 9999999.99 9999999.99 9
999999 9999999.99 9999999.99

-----
Type title line at cursor position          3215K Avail
  
```

modate the remaining categories. Set up all the reports before deleting the unwanted categories from DIRECTORY1 and the remaining report formats. Remember that although AppleWorks 3.0 and AppleWorks 4 can accept up to 30 report formats, earlier versions of AppleWorks can accept only eight report formats for each data base file.

[Dr. Richard Melpignano teaches French and Latin at Holliston (MA) High School.]

Closeout Prices on AppleWorks Products

Here are special closeout prices on products for your Apple II system. Quantities are limited; order early to assure that we can fill your order. No rainchecks at these closeout prices.

The Manager

Seven Hills Software's The Manager brings the power of the Macintosh MultiFinder to your Apple IIGS. Install The Manager and you can switch between 16-bit applications with a single keystroke. No more long waits while you save your files, quit, and then re-launch an application. The Manager also provides an enhanced clipboard that lets you transfer data between programs. A complete review of The Manager appeared in the April 1993 issue of the *AppleWorks Forum*.

The Manager requires an Apple IIGS running system 6.0 or later, at least two megabytes of RAM (four megabytes recommended), and a 3.5-inch disk drive or hard disk drive.

List: \$69.95; NAUG closeout: \$29.95 (plus \$3.50 s/h).

Express 2.0

Express 2.0 is an Apple IIGS print spooler that can dramatically enhance the performance of AppleWorks GS and all your other 16-bit programs. Select "Print" with your program and Express spools your document onto

your hard disk. It then returns control of your computer to you, letting you work with AppleWorks GS or any other 16-bit application while Express supervises the printing.

Express requires an Apple IIGS equipped with a hard drive, GS/OS 5.0.3 or later, and any direct connect printer except a StyleWriter.

List: \$49.95; NAUG closeout: \$19.95 (plus \$3.50 s/h).

Hands on AppleWorks 1.x / 2.x

This is the most popular instructional guide for AppleWorks. Leuhrmann and Peckham's *Hands-On AppleWorks Teacher's Set for AppleWorks 1.x and 2.x* includes softcovered student editions of the *Hands-On Guide to the AppleWorks* word processor (152 pages), data base (166 pages), and spreadsheet (160 pages). The kit also includes a copyable student data disk and a 74-page Teacher's Guide with exercises, tests, questions, and projects. This is the top-rated package for teaching AppleWorks.

List: \$32.95; NAUG closeout: \$16.95 plus \$3.50 s/h. (The closeout price applies only to the AppleWorks 1.x/2.x version of *Hands-On AppleWorks*. The AppleWorks 3.0 version of the package is available at NAUG's regular discount price of \$27.95 plus \$3.50 s/h.)

A Macro that Deletes Columns and Blocks in the Word Processor

by Keith Johnson

The AppleWorks word processor, like most word processing programs, is “line-oriented”. When you select sections of text to delete, copy, or move, you can choose any numbers of lines or pieces of lines.

However, there are times when you want to delete columns or blocks of text from a word processor document. An example appears in *Figure 1*. This is a text file that was created on an MS-DOS computer, downloaded from a BBS, and imported into AppleWorks. IBM-compatible systems use “line-break” characters to indicate the end of lines, and AppleWorks substitutes the “#” symbol for such characters when it imports the file. You could use <oa-R> to replace the “#” symbol with no character, but then you lose any legitimate occurrences of that symbol in the document. It would be helpful if you could delete the first column of this document.

A column-oriented delete function also lets you remove unnecessary spaces between columns (as in *Figure 2*) or spaces at the beginning of every line. (You get those spaces when you download formatted text files from electronic bulletin board services.)

The macro in *Figure 3* lets you delete columns or rectangular blocks of text from any section of a word processor document that contains a carriage return at the end of each line. The macro uses the parenthetical repeat function and thus requires UltraMacros 4.0 or later. The macro will work with AppleWorks 3.x or 4.0x.

Figure 1: Imported Text File

```
#since feeling is first
#who pays any attention
#to the syntax of things
# will never wholly kiss you;
#
#wholly to be a fool
#while Spring is in the world
#
#my blood approves,...
```

Figure 2: Extra Spaces between Columns

145	Army
27	Navy
273	Air Force
82	Marines
512	Elephant

How to Use the Macro

1. Type the macro into your macro file. I used <ba-X> to define the macro, but you can use any key combination to name the macro.
2. Compile the file and save it as your default macro set. *[Ed: Step-by-step directions for adding a macro to your default macro set appear in the sidebar “How to Add a Macro” in the April 1993 issue of the AppleWorks Forum.]*
3. To use the macro, put the cursor at the upper-left corner of the block of text you want to delete, and press <ba-X> (or your chosen key combination). Do not start the macro on a blank line; you will get an error message if you do so.

A message will tell you to move the cursor to

Figure 3: Macro that Deletes Columns

```
<ba-X>:<awp><                                { Define the macro.                                }
d=peek $b5:                                { Get the line length or command.                }
if d>207 msg " Don't start on a blank line. ":stop:endif:
                                           { If the line is blank, stop and display a warning. }
posn s,t:                                  { Get the initial position of the cursor.          }
msg " Move cursor right and/or down, press Return. ": { Display these directions.          }
begin:                                     { Begin a loop that lets users position the cursor. }
$9="":                                     { Initialize string variable $9.                  }
k=key:                                    { Get a keypress from the user.                    }
if k=13 exit:endif:                        { If it is a Return, exit from the loop.          }
if k=8 or k=10 or k=11 or k=21 print chr$k:endif: { If it is an arrow key, issue it.                }
if k=136 or k=138 or k=139 or k=149 print chr$k:endif: { If it is an oa-arrow, issue it.                }
if k>175 and k<186 print chr$k:endif: { If it is an oa-1 thru 9, issue it.                }
rpt:                                       { Repeat the loop to get the next keypress.        }
posn u,v:                                  { Capture the final position of the cursor.        }
if u<s msg " Do not move left. ": { If the cursor ended to the left, display a warning... }
stop:endif:                               { ...and stop.                                     }
if v<t msg " Do not move up. ": { If cursor ended above, display a warning...      }
stop:endif:                               { ...and stop.                                     }
msg " Press Return to delete, Esc to stop. ": { Ask for confirmation.                          }
k=key:                                    { Get a keypress from the user.                    }
ifnot k=13 msg "":                          { If not confirmed with a Return, erase the message... }
endmacro:endif:                           { ...and end the macro.                          }
m=u-s:                                    { Determine the interval between the initial and final columns. }
begin:                                     { Begin a loop that deletes the characters.          }
posn a,b:                                  { Get the current cursor position.                  }
d=peek $b5:                                { Get the line length or command.                }
if d>207 up:rpt:endif:                     { If it is a command line, go up one line and repeat the loop. }
ba-Y:                                       { Perform the subroutine that deletes the characters from one line. }
ifnot b=t up:                               { If this is not the top selected line, go up one line... }
rpt:endif:                                 { ...and repeat the loop.                          }
msg ">!"                                   { Erase the displayed message and end the macro.    }

<ba-Y>:<asr><                                { Define the subroutine that deletes the characters from one line. }
d=peek $b5+1:                              { Get the position of the carriage return.          }
if a<d oa-del:endif:                       { If the cursor is to the left of the carriage return blot, }
                                           { delete the character under the cursor.            }

if s=u exit:endif:                         { If only one column is being deleted, exit the loop now. }
if a=s:                                     { If finished with this line,...                    }
(right) m:                                  { ...move right to last chosen column...            }
exit:endif:                               { ...and exit the subroutine.                      }
left:a=a-1:                                { Otherwise, move left, decrement the column counter... }
rpt>!                                       { ...and repeat the loop.                          }
```

the right and/or down. You can use the Arrow Keys, the Apple-Arrow Keys, and the Apple-1 through Apple-9 keys to move the cursor. However, make certain that the cursor does not end to the left or above its initial position. If it does, the macro will display an error message and stop. The macro will not highlight your text as in a normal Delete operation; you have to keep

track of the starting and ending positions without that assistance.

4. The macro will ask you to confirm your action by pressing the Return Key. Press the Escape Key (or any key besides Return) if you change your mind and decide not to delete the text. If you press the Return Key, the macro will delete

My Favorite Macro...

the selected text, starting at the bottom of the selection.

Technical Details

Much of the complexity of this macro results from the need to accommodate special cases, such as deleting a single column or handling blank lines. The <oa-Delete> function used by the macro behaves differently in those situations.

The macro peeks at location \$b5 several times. This location can hold two kinds of information. If the cursor is on a line that contains characters, \$b5 holds the number of characters in the line. If the line does not contain characters, \$b5 contains the command that occupies the line; for example, a carriage return or a printer option. (Command lines store a value greater than 207 (\$cf) in this location.)

Creative macro programmers can probably think of many ways to improve the macro. For example, it should be possible to highlight the selected text. And one could probably alter the macro to work in a document that does not have carriage returns at the end of each line. But each of these changes will increase the complexity of the macro.

I created this macro because I enjoy finding ways to make AppleWorks operate in ways it was not intended to work. The fact that I was able to do this without using a complex assembly-language program underscores the power of UltraMacros. ■

[Keith Johnson is Associate Director of the Fleischmann Planetarium at the University of Nevada.]

[Ed: A working copy of this macro appears on this month's NAUG on Disk, which costs \$10 from NAUG. NAUG on Disk requires a 3.5-inch disk drive; the macro requires AppleWorks 3.0 or later enhanced with UltraMacros 4.]



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Remember to notify **NAUG** if you change your address. Do not rely on the post office to forward your mail; you may miss some issues. Send address changes to **NAUG**; Box 87453; Canton, MI 48187.

NAUG News

Late News for NAUG Members

Laser Computer Repairs

If you own a Laser 128 or other Laser-brand Apple-compatible computer, you can still get Laser-brand parts and repairs for your system.

CDA, which recently acquired Laser Computer's entire parts inventory for Apple II-compatible computers, repairs all Laser-brand systems. The company offers flat rate pricing; for example, replacing a Laser 128 motherboard costs approximately \$150. All services come with a 30-day warranty.

[CDA, Box 16046, Wichita, Kansas 67216; (316) 262-4200; Fax: (316) 263-9663.]

Free Legal Information

NAUG has a limited supply of "How Computer User Groups Can become Tax Exempt", an excellent 73-page booklet that describes how your user group can establish and maintain tax-free status.

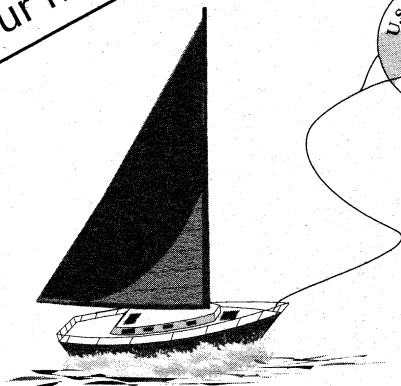
For a copy, send \$3.50 s/h to "Tax Free Booklet", NAUG, Box 87453, Canton, Michigan 48187. No credit cards, please. Our thanks to Thomas Warrick of Pierson Semmes and Bemis, the author of this booklet, and the User Group Connection for supplying these booklets to NAUG.

Shipping Costs

Apparently, United Parcel Service does not recognize today's less-inflationary climate. This February, UPS once again raised shipping rates by twice the current rate of inflation. These annual increases have raised the cost of residential delivery of small UPS packages by more than 100% over the past five years; you have undoubtedly noticed the increases in shipping charges from catalog companies and others who must recover these costs.

NAUG uses the lowest cost shipping service available. For example, we use Priority Mail for small packages that do not require insurance. However, we must now raise the shipping rates we charge for packages shipped by UPS. Be assured that as a member organization, NAUG will continue to seek the lowest cost shipping service available and will pass the savings on to our members. ■

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NAUG maintains a directory of over 100 member-volunteers who offer technical support for AppleWorks. If you are qualified and want to volunteer to help, please complete the form on the other side of this page.

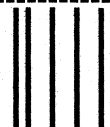
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- ☐ 4 - AppleWorks 4.x

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- ☐ 1 - Word Processor
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- ☐ 4 - Integration between modules
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- ☐ 18 - Thesaurus
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- ☐ 21 - UltraMacros 4.x

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- ☐ 13 - Memory Cards IIe
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- ☐ 15 - Memory Cards IIGs
- ☐ 16 - TransWarp IIe
- ☐ 17 - TransWarp IIGs

- ☐ 18 - Zip Chip
- ☐ 19 - Zip GSX

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— Public Domain Games from the NAUG Library —

Classic Games Disk

Eight of the most popular thinking games for the Apple IIGS. No aggressive games in this collection. Includes **Life** (Try to create a set of cells that can flourish in an environment.), **Four in a Row** (Line up four pieces in a row while the computer tries to stop you.), **Brick Out** (Hit the ball with the paddle and destroy the bricks.), **Bounce It** (Brick Out adorned with colors and sounds. Shareware fee: \$10). **Backgammon**, **Superlathe** (Set up a wood lathe and see a three dimensional picture of your product.), **Towers of Hanoi**, and **Yahtzee**.

Formula Club

A game that helps students learn the chemical symbols and formulas. Formula Club displays a chemical symbol or formula, then students type the symbol or the name of the element or compound. The program displays all work in large characters that can be read by a group of students. Shareware fee to author: \$10.

Orbizone Disk

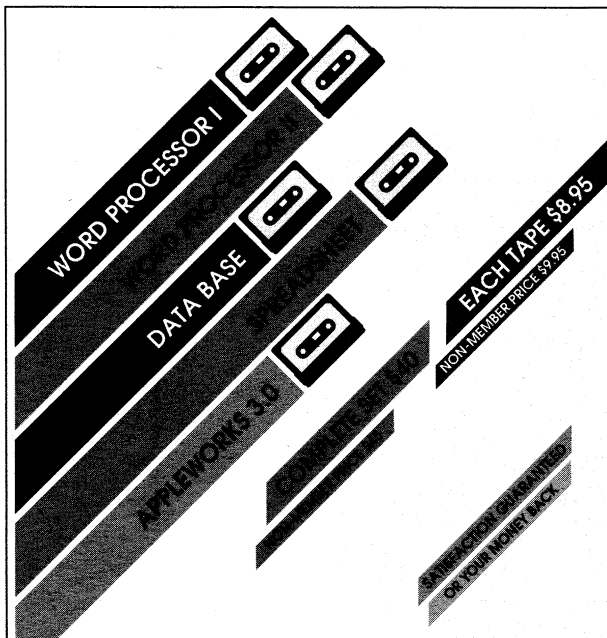
A high level game of asteroids that lets you create and edit your own shapes. Supports stereo output and offers exceptional graphics. Requires a joystick.

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The Laser PC4: A Portable Add-On for Your Apple II

by Ron Berntson

As I write these words, it's a crisp fall morning on the prairies. I'm sitting on the bed in my hotel room and the sky outside the window is filled with Canadian geese circling the grain fields searching for a place to feed. This is a convenient and inspirational place to do my work.

On my lap is a Laser PC4 portable computer. Laser is an old friend to Apple II owners. Over the years the company manufactured a number of Apple II-compatible systems.

Their PC4 portable is small (10" x 7.6" x 1.3") and light weight (just under 2 pounds) (see *Figure 1*). The Z80 processor drives a slew of simple built-in applications: word processor, spreadsheet, spelling checker, calculator, telephone directory, expense account manager, appointment book, alarm clock, BASIC language environment, and an optional thesaurus. Even more convenient is Bridge-It, an AppleWorks 3.0 add-on that lets you upload and download files to the Laser PC4 from within AppleWorks.

All this convenience is inexpensive, too. The PC4 costs \$239, a cable to connect the computer to your Apple costs \$12, the Thesaurus cartridge costs \$35, and the Bridge-It software adds \$35 to the package price.

Perfect Solutions, the developer of the Bridge-It software and the leading dealer of the PC4, markets this portable computer to schools. Word processing is the main application used in classrooms and the cost of one desktop computer can buy four or five

Figure 1: Laser PC4 Computer



PC4s. However, my main interest in the PC4 is for getting work done away from my Apple II.

The Hardware

It takes four AA batteries or an AC power adapter to run the PC4. I could not verify the claimed 40 hour battery life because I kept forgetting to turn the unit off. The convenient built-in auto-shutdown feature preserved the batteries, which lasted a long time. Pressing the Reset Key after an auto-shutdown restarts the computer and preserves your data.

The PC4 comes with 128K of RAM, but only 32K is available to any one application. Most often, 1K of memory converts into one page of double spaced text, so the 32K limitation was not a problem for my on-the-road work.

The keyboard is full size, but a real nuisance. First, I'm a 50 word per minute typist and I could out-

type the PC4. That resulted in double or incorrect characters. In addition, the keyboard layout is different from the Apple keyboards I've used for the past decade. The home row positioning bumps are on the index fingers (F and J) rather than the middle fingers (D and K). The single and double quotation key, Caps Lock, Escape, and Control keys are all positioned differently (see *Figure 2*). The PC4 does not have a Tab Key; the Reset Key is in the position usually used to insert tabs. This made for some interesting typing until I got the hang of using the Control-T combination to insert a tab.

The Num Lock Key turns the keyboard into a number pad. Both the Num and Caps Lock keys have an on-screen indicator.

With enough use, most PC4 owners will get used to the layout and response. When it comes to different keyboard layouts, familiarity breeds contentment.

The Screen

The small LCD screen can display four 40-character lines of text. The screen is easy to read in good light, and a dial lets you adjust the contrast. However, the screen characters do not use true descenders, so the g, y, p, q, and j letters look odd (see *Figure 3*).

You can only see one or two sentences on the PC4 screen, which I found limiting because I like to see the context of what I am writing. I could use the PC4 to take notes, but the small screen made it difficult to do any serious writing.

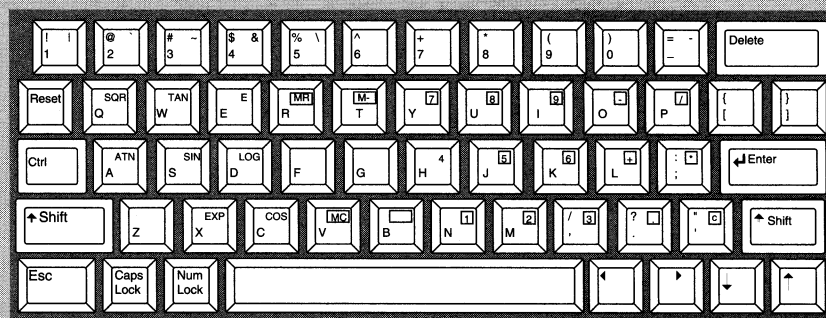
Ports

Although you will generally do your printing from AppleWorks, you can use the PC4 with most popular impact and inkjet printers. There is only one multifunction port on the back of the PC4, but the computer's Utility Menu lets you configure the port to connect to a serial or parallel printer.

User Interface

The applications built into the PC4 share a com-

Figure 2: PC4 Keyboard



mon user interface. You turn the unit on and the system presents a set of hierarchical menus. You use the Arrow Keys to highlight an option and press the Return Key. Alternatively, you can type a number or letter that always prefaces the menu selection. Pressing the Escape Key returns you to the previous menu. When the system presents a list (for example, the list of files currently in the word processor), the left and right arrow keys display the available selections.

Word Processor

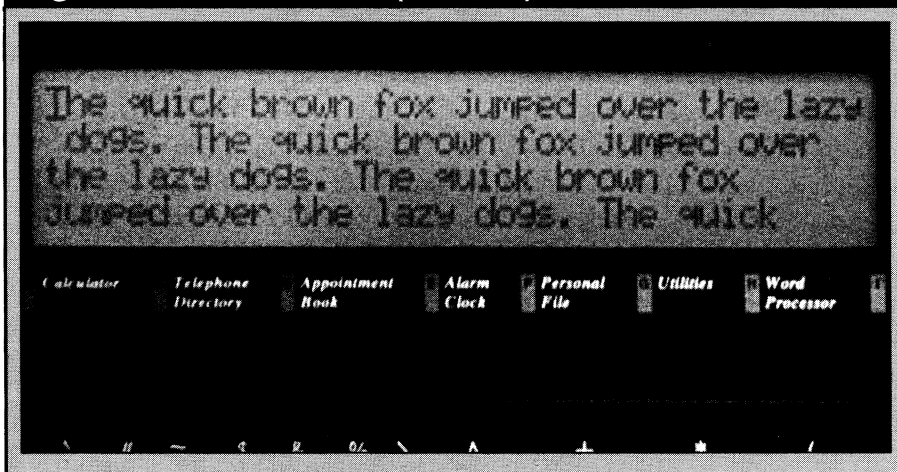
The PC4 offers 11 applications, but the word processor will be the tool that interests most NAUG members.

Unfortunately, there is no relationship between the commands used in AppleWorks and those used by the PC4. For example, Control-C finds and replaces text, Control-W spell checks a document, and Control-I toggles between the insert and overstrike cursor. (The cursor starts in overstrike mode, which is not my preferred choice for editing text.) It will take you a while to learn the PC4's word processor, but Control-? displays a useful help screen that lists the commands.

Navigating around a word processor document is easy. You can move the cursor a character, word, or line at a time, or you can jump to the beginning or end of the document. There are no commands that jump to the beginning or end of a line, sentence, or paragraph.

More importantly, the word processor does not let you operate on blocks of text within a document. (You cannot select a chunk of text and copy, delete, or move the block to a new position.) The lack of

Figure 3: PC4 Screen (At 80%)



block operations is a significant failing that makes it difficult to edit your writing.

The word processor's Find and Replace commands are flexible. You can do a straight Find, a Find and Replace, or redo a previous Find. You can search for whole words or any string of characters.

The built-in spell checker will check a word or the entire document. You can set the 80,000 word dictionary to three different levels: high school, business (default), or college. The level restricts or expands the number of possible choices shown for an incorrectly spelled word. However, the system does not let you create a custom dictionary or add words to the built-in dictionary.

Checking an entire document is tedious because the PC4 shows you every instance of a word it does not recognize. (It took more than 15 minutes to check an essay I wrote about using the Internet because "Internet" was not in the PC4 dictionary; I had to confirm the spelling of every instance of the word.) Although the PC4 can check the spelling of a single word quickly, you will want to spell check your complete documents in AppleWorks after you transfer the file.

The optional thesaurus worked well and provided useful suggestions for much of my writing. The thesaurus is easy to use; you put the cursor anywhere in the word you want to check and invoke the thesaurus. The system lists possible definitions; you select a definition, press the Return Key, and the computer displays a list of suggested replace-

ment words. Selecting the word you want and pressing the Return Key makes the substitution in the document.

You will probably transfer your word processor documents into AppleWorks for final formatting and printing, but you can format and print documents from the PC4. You control the format of documents with "dot" commands that begin with a period, then a two-letter code, and an optional number or text parameter. Except for the underline and boldface commands,

each dot command must appear on a separate line in the document. This approach will be familiar to old-time word processor users who remember AppleWriter and WordStar, both of which used dot commands to control their output.

The dot commands let you control page length, top, bottom, left and right margins, headers and footers (which can include the current time, date, page number and document name), page number, conditional page breaks, tab stops, and line spacing.

Other Applications

The only two other applications I found useful were the spreadsheet and the BASIC language environment. The calculator is of some use, but I found the telephone directory, appointment book, alarm clock, and expense account too limited by their feature set and displays. The personal file application is interesting; it is a small text entry application that you can lock with a password and use to store your on-line passwords, automated teller machine identification numbers, and the like.

Spreadsheet

PC4 spreadsheets can include as many as 256 columns and 8,192 rows. However, you can only display two rows and three columns at the same time on the miniature screen. Pressing Shift-/ invokes the main commands that you use to change the formatting, copy or move cells, manipulate spreadsheet files, and create macros. (Using Shift-/

Other Alternatives to the PC4

NAUG members have long asked for a portable system that can run AppleWorks, but Apple and third party vendors never responded to this challenge. However, there are some practical alternatives that let you use other programs on portable systems and transfer your data back and forth to AppleWorks.

NAUG uses ClarisWorks running a Macintosh PowerBook 140 as our portable "AppleWorks" system. The program is powerful, easy-to-use, shares many command key strokes with AppleWorks (for example, Apple-S saves, Apple-P prints, and Apple-C copies), and can read and write AppleWorks files.

Directions for transferring ClarisWorks files into AppleWorks appeared in the June through October 1993 issues of the *AppleWorks Forum*. Directions for transferring files from AppleWorks into ClarisWorks appeared in the April 1992 issue of the *ClarisWorks Journal*, the publication of NAUG's sister organization, the ClarisWorks Users Group (C•WUG). (Back issues of both publications cost \$4 post-paid directly from NAUG.)

You can use any Macintosh PowerBook with a built-in disk drive for your work. A "previously owned" PowerBook 140 with 4 megabytes of RAM and a 40 megabyte hard drive costs about \$900 and is more than adequate for this application. Prices on used 140's should go down substantially this spring when Apple introduces a new low-cost Macintosh PowerBook to replace the current bottom-of-the-line 145B, which also does a good job with ClarisWorks.

You can also use any MS-DOS portable for your on-the-road computing. You use Cross-Works, an application that runs on both your Apple II and MS-DOS system to transfer your AppleWorks files to the portable. Then you use any MS-DOS or Windows program capable of reading and writing WordPerfect, Lotus 1-2-3, or dBase files on the laptop. We particularly like SuperWorks, which can read these files and works just like AppleWorks on the MS-DOS computer. When you are done, you use Cross-Works to transfer your work back into AppleWorks.

Transferring files to and from an MS-DOS laptop requires you to attach the Apple II and MS-DOS systems with a cable, but the cable comes with Cross-Works and the transfer and translation process works smoothly.

A favorable review of Cross-Works appeared in the May 1989 issue of the *AppleWorks Forum*. The program lists for \$99 and costs \$69 from Quality Computers and other discount vendors.

SuperWorks lists for \$99.95. Until May 1, NAUG members can buy SuperWorks for \$69.95 directly from Remarkable Technologies, the United States distributor of the program (add \$5 s/h; \$8 s/h outside the U.S.). You must identify yourself as a NAUG member and mention this article to qualify for this special NAUG discount.

A favorable review of SuperWorks appeared in the March 1992 issue of the *AppleWorks Forum*.

[Remarkable Technologies, 245 Pegasus, Northvale, New Jersey 07647; (800) 782-1955; Fax: (201) 767-7227.]

— Cathleen Merritt

will seem natural to former VisiCalc, SuperCalc, and Lotus 1-2-3 users, but not to AppleWorks users.) The spreadsheet offers a comprehensive set of mathematical, financial, logical, and date functions.

BASIC

The built-in BASIC interpreter supports the features you would expect to find in a simple BASIC like AppleSoft. The PC4 offers both editing and environment command keys, but the lack of a disk

drive or convenient storage medium limits the usefulness of the PC4 when creating BASIC programs. If you need a short BASIC program that performs something like mortgage calculations, you might find the PC4 handy. However, as a programming environment, the PC4 is limited.

Bridge-It

Your ability to transfer information to a desktop system is an important part of portable computing.

Hardware Review...

You need to easily transfer files you created with AppleWorks to the portable, work on the documents while you are on the road, and transfer your work back into AppleWorks.

The PC4 is unique in that it offers Bridge-It, an add-on that installs itself right into AppleWorks 3.0 and lets you transfer word processor, spreadsheet, and data base files between systems. (Bridge-It requires AppleWorks 3.0; a version that works with AppleWorks 4 is under development.)

The PC4's Personal File, Appointment Book, and Telephone Directory applications translate to and from AppleWorks data base files. Spreadsheets will translate from the PC4 to AppleWorks, but not in the reverse direction (AppleWorks offers more functions than the PC4).

Word processor files translate both ways, but any formatting set up on either system will be lost. For instance, words within the bold markers in AppleWorks will not be formatted in boldface on the PC4. You can enter text on the portable, but cannot use the PC4 to format your AppleWorks printouts.

Installing Bridge-It is easy; the program adds "PC4 Transfers" to AppleWorks' Other Activities Menu. You use the optional cable to connect the PC4 to a Super Serial card or to the modem or printer port on the IIGS or IIC and configure your system; the program offers ample instructions. If you follow the directions, you should have no troubles getting Bridge-It to work correctly. (I mismatched the communications speed of the two devices and AppleWorks crashed. However, once I set both computers to 9600 baud, it was smooth sailing.)

Transferring files from the PC4 to AppleWorks is simple; the PC4 will either send all your PC4 files or all files of any type you specify (word processor, spreadsheet, and so forth). Bridge-It is smart enough to handle AppleWorks 3.0's 12 file desktop limit; attempt to transfer too many files and AppleWorks gives the appropriate warning.

Transferring files from AppleWorks to the PC4 went smoothly. Bridge-It presents a list of the files on your AppleWorks desktop. You select the files you want, and Bridge-It downloads them to the PC4.

The Decision

Before buying a PC4, you should carefully consider the jobs you want to perform. For some jobs, the PC4 will do.

However, I was not happy with the PC4 as a portable writing machine. Its small screen, keyboard problems, and the lack of block editing commands hampered my writing. If I had a choice, I would use a Macintosh PowerBook when I travel or need to take notes in a library or other research situation. Unfortunately, a new PowerBook costs at least six times what you pay for a PC4, and I don't travel enough to justify the cost.

Perfect Solutions thinks that the PC4 is a cost-effective solution in K-12 schools. For \$1,200 you can put together a four-machine word processing station with a printer, cables, and a 4-way parallel switch. Your students would have access to a limited computer with a word processor suitable for middle year students (Grades 4 to 9). However, it isn't exciting and your students will need to learn how to transfer files to AppleWorks, a Macintosh, or an MS-DOS computer if they want long term storage of their data.

[Ron Berntson is a Librarian and Network Manager at Nutana Collegiate in Saskatoon, Saskatchewan, Canada.]

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How to Chart Projects with the AppleWorks 4 Spreadsheet

by Stan Hecker

This month's favorite template is an AppleWorks 4 project planner. The template demonstrates how to use AppleWorks 4's new Date format and @DATE function to create Gantt charts that provide a pictorial display of the tasks involved in a project. The author assumes that you know the basic AppleWorks spreadsheet commands.

The lack of support for date arithmetic in earlier versions of AppleWorks made building date-dependent templates a daunting prospect. However, AppleWorks 4's support for date formatted cells and its new @DATE function make date manipulation easier. [Ed: See the article entitled "How to Do Date Arithmetic in AppleWorks" in the June 1991 issue of the **AppleWorks Forum** for a description of how to perform date arithmetic with earlier versions of AppleWorks.]

This month's article describes how to use these new AppleWorks 4 features to develop a template that you can use to coordinate your personal or group projects. The template produces Gantt charts like the example in *Figure 1* that let you visualize the relationship among component tasks.

Overview

The worksheet consists of two sections. Section A (cells A1 through K17) is the data entry area where you type the title of the project and the names of the participants and their respective tasks. In this area you also enter starting and completion dates for the project and starting dates and durations for the tasks.

Section B (cells L1 through W17) is the date calculator and chart display area. AppleWorks uses the dates you entered in Section A to create the chart that appears in Section B. The chart depicts the relationship among the project tasks. You can use the chart to track a project over any number of weeks.

How It Works

The template first checks the project starting and completion dates that you enter in Section A; it uses that information and AppleWorks 4's date math capability to calculate the duration of the project in weeks. From this information, the spreadsheet automatically plots the date header in Section B, row 12. The date header is like the x-axis label on a bar graph. If you specify a Saturday start date in Section A, the date header in Section B will display a Saturday date as the first day of each week of the project. The hypothetical "Trekkie" project in *Figure 1* begins on a Saturday; each week of the project also begins on a Saturday.

The template then checks the beginning date and duration of all tasks that you list in Section A. The spreadsheet converts this information into a visual display in the form of a horizontal project-planning graph, or Gantt chart.

Each bar of the chart represents one task within the project. The template calculates when a task begins and ends and uses repeating hyphens to display those phases of the task. Any weeks during which the task is ongoing (that is, not beginning or ending) are represented by a series of repeating Xs. For example, a task that takes four weeks looks like this:

-----XXXXXXXXXXXXXXXXXXXX-----

The chart in Section B displays the overall relationship among the tasks. You can see when each task

Figure 1: Sample Project Plan for Starship Enterprise

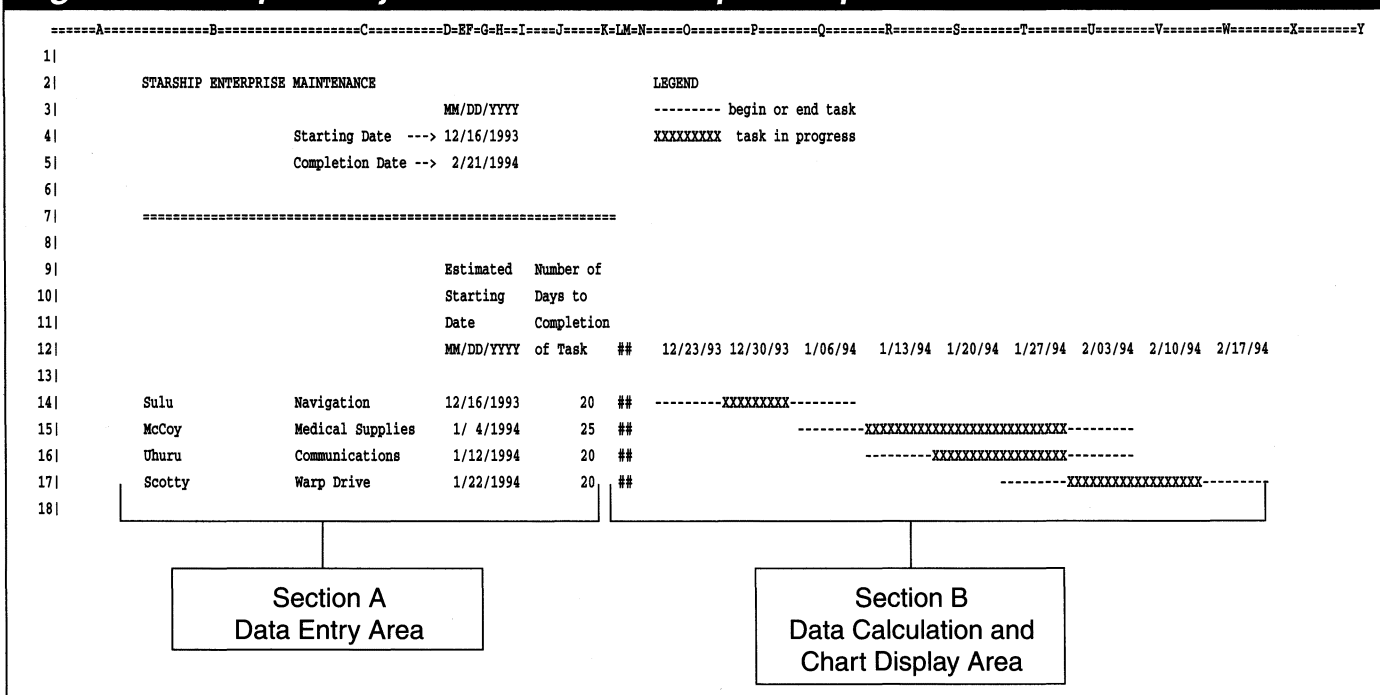


Figure 2: Column Widths

Column(s)	Width	Column(s)	Width
A	11	H	4
B, C	20	I	2
D	2	J	8
E	1	K	3
F	2	L, M	1
G	1	N	3

begins and ends and which tasks run concurrently. This information can help you make sure you complete a project in the most efficient way.

For example, when we publish each issue of the *AppleWorks Forum*, editing and layout tasks can overlap because our desktop publisher can work on one article while an editor works on another. But all editorial and layout tasks must be completed before we deliver galleys to the printer. And printing must be complete before we can meet our mailing deadline. A Gantt chart lets us visualize these overlapping and inter-dependent tasks.

Creating the Template

Let's develop the project planning template in *Figure 1*. You can use that template to track any task or project. You will start by changing the default

settings and by setting the column widths. Follow these steps:

1. Launch AppleWorks 4 and create a new spreadsheet called "PLANNER.TEMPL". If you have not activated the auto-save feature of AppleWorks 4, be sure to save your template frequently by pressing Apple-S.
2. Use Apple-V to change the "Value format" to "Date". Choose option # 5, "MM/DD/YY".

This setting configures all the numeric cells in the spreadsheet to display values in MM/DD/YY format. [Ed: For more information about the date format and functions see the sidebar entitled "Understanding Date Arithmetic in AppleWorks 4" on page 25.]

International readers may want to select the date format they use locally, but that will require several changes to the worksheet. For now, I suggest that you create the template as described in this article and experiment later.

3. Use Apple-V to change the recalculation "Order" to "Rows" and "Frequency" to "Manual".
4. Use Apple-V to change "Protection" to "No".

Figure 3: Labels

Cell(s)	Label
B2 - C2	ENTER PROJECT TITLE HERE
D3 - H3	MM/DD/YYYY
C4	Starting Date ----> (four hyphens and the greater than symbol)
C5	Completion Date --> (two hyphens and the greater than symbol)
E4	/
K7	=== (three equal signs)
D9 - H9	Estimated
J9 - K9	Number of
D10 - H10	Starting
J10 - K10	Days to
D11 - F11	Date
J11 - K11	Completion
J12	of Task
B14	Aaron
C14	Task 1
B15	Beth
C15	Task 2
B16	Chuck
C16	Task 3
B17	Denise
C17	Task 4
O2	LEGEND
O3	----- (nine hyphens)
O4	XXXXXXXXXX (nine Xs)
P3-Q3	begin or end task (one space before "begin")
P4-Q4	task in progress (one space before "task")

5. Press Apple-V to display the "Current Settings" box and confirm the changes you just made. Then press the Escape Key.
6. Use Apple-L to change "Column width" to the values listed in *Figure 2*. Note that AppleWorks 4 displays the current column width in the lower left-hand corner of the screen next to the cell indicator.
7. Press Apple-O to access the Options Menu and change the characters-per-inch setting to "17"

and the "PH" ("print header") option to "No". Then press the Escape Key.

Entering Labels and Values

Next you will enter the worksheet labels and format the cells. Follow these steps:

1. Enter the labels listed in *Figure 3*. Remember to press Shift-" before you enter a label that starts with a symbol.
2. Use Apple-C to copy "Within worksheet" cells D3 through H3 to cell D12.
3. Use Apple-C to copy cell K7 "Within worksheet" to cells J7 through B7. This puts a series of equal signs under the worksheet header.
4. Use Apple-C to copy cell E4 "Within worksheet" to cell G4.
5. Use Apple-L to change the "Value format" of the "Block" of cells from D4 through H4 to "Fixed" with zero decimal places. This format change overrides the date format that you specified when you started to create the template.
6. Use Apple-C to copy cells D4 through H4 "To clipboard" as a "Block". Then copy "From clipboard" to cells D5, D14, D15, D16, and D17.
7. Use Apple-L to change the "Value format" of the "Block" of cells from J14 through J17 to "Fixed" with zero decimal places.

Entering Formulas

Now you will enter the formulas. Continue as follows:

1. Enter the formulas listed in *Figure 4*. See the sidebar entitled "About the Formulas" for a description of the purpose and operation of each formula.

Next, you will copy these formulas into other cells. When you complete steps #2 and #3 below, each formula-containing cell will display a pound sign (#) because we intentionally made columns L and M too narrow. That reduces screen clutter. The underlying values are not affected by the display.

Figure 4: Formula

Cell(s)	Formula
L12	@DATE(H4,D4,F4)
M12	@DATE(H5,D5,F5)
L14	@DATE(H14,D14,F14)
M14	+L14+J14
O12	@IF(H4=0,"",@DATE(H4,D4,F4+7))
P12	@IF(@OR(@ISBLANK(O12),O12+8>M12),"",O12+7)
O14	@IF(@OR(L14>O12,O12-7>M14),"",@IF(@AND(O12-7>L14,M14>O12),04,03))

2. Use Apple-C to copy cell L14 "Within worksheet" into cells L15 through L17. Press Apple-R to make all cell references "Relative".
3. Copy cell M14 "Within worksheet" into cells M15 through M17. Press Apple-R to make all cell references "Relative".
4. Use Apple-C to copy cell P12 "Within worksheet" into cells Q12 through BN12. Choose "Relative", "Relative", "No change", and "Relative" at the prompts. These 50 copies of the formula, together with the source cell (O12) and the first "week" cell (P12), give the chart a potential width of 52 weeks. Virtually all projects can be completed in a year or less. If your Apple II has expanded memory, you can extend the chart as far to the right as required for longer term projects.
5. Copy cell O14 "Within worksheet" into cells O15 through O17. Make all references to cells in column O "No change". Make all other references "Relative".

That completes the formulas. Now I suggest that you add "alerts" to your template; follow the step-by-step directions in the "How to Use @ALERT" sidebar on page 27.

Protecting the Worksheet

Next, you will protect your work. Follow these steps:

1. Use Apple-L to select the "Block" of cells from A1 through BN17. (The quickest way to do this

Understanding Date Arithmetic in AW 4

The general form of AppleWorks 4's new @DATE function is @DATE(year,month,day), which returns the number of days that passed since January 2, 1904, the reference date used by AppleWorks. For example, the formula @DATE(1994,5,15) returns the value 33007, the number of days between January 2, 1904 and May 15, 1994.

The formulas in cells L12, M12, and L14 through L17 in the template use @DATE to convert dates to integer numbers. Once you convert dates to numbers, date arithmetic is simple: just add or subtract the numbers. To display the result as a date, you set the value format of the cell to Date format. The formulas in cells M14 through M17 use this feature to calculate the dates on which tasks should end.

is to put the cursor in cell A1 and press Apple- (Apple-period) and then Apple-9.) Choose "Protection" and allow "Nothing".

2. Use Apple-L to set the protection to allow "Values only" in the following "Blocks": D4 to D5, F4 to F5, H4 to H5, D14 to D17, F14 to F17, H14 to H17, and J14 to J17.
3. Allow "Anything" in the following "Blocks" of cells: B2 through C2 and B14 through C17.
4. Press Apple-V, select "Protection" and respond "Yes" to turn protection "on".
5. Put the cursor in cell B2 and save the template. When you open a copy of the worksheet, the cursor will automatically appear in this cell so you can enter the project's title.
6. Use AppleWorks 4's File Activities Menu to "Lock" the template.

About the Formulas

Cells L12, M12, and L14 through L17: The formulas in cells L12 and M12 use the @DATE function to convert the project's starting and completion dates to integers. The formulas in cells L14 through L17 do the same for the starting date of each task. [Ed: A description of the @DATE function appears in the "Understanding Date Arithmetic in AppleWorks 4" sidebar.]

Cells M14 through M17: The formula +L14+J14 in cell M14 takes the starting date for task #1, expressed as an integer, and adds to it the number of days expected to complete the task. Formulas in cells M15 through M17 perform the same function for tasks #2, #3, and #4.

Cell O12: The formula @IF(H4=0, "", @DATE(H4, D4, F4+7)) says, "If the starting date year is blank, leave cell O12 empty; otherwise, make cell O12 display the date representing the end of the first week of the project. The "7" at the end of the formula adds seven days, or one week, to the starting date. This is the first week displayed in the date header in row 12.

If you prefer to plan projects on a biweekly or monthly basis, use Apple-U to change the "+7" in the formula to "+14" (for biweekly) or "+30" (for monthly). You must make analogous changes in cells P12 and O14 below.

Cell P12: The formula

@IF(@OR(@ISBLANK(O12), O12+8>M12), "", O12+7)

in cell P12 (and all copies of this formula) increments the date in the adjacent cell (O12) by seven days and displays the new date in the date header in row 12. If the project ends eight days or less after its adjacent cell (...O12+8>M12...) or if the adjacent cell is blank (...@ISBLANK(O12)...), the current cell remains blank, because the project is ending and there is no need to display more weeks in the date header.

Cell O14: The formula @IF(@OR(L14>O12, O12-7>M14), "", @IF(@AND(O12-7>L14, M14>O12), O4, O3)) in cell O14 (and copies of this formula) handle the chart-making function. They compare the current date at the end of each week in row 12 to the starting and completion dates (L14 and M14, respectively) of each task. If the task has not yet begun (...L14>O12...) or is already completed (...O12-7>M14...), the cell remains blank. If the task has already begun and is in progress, a series of Xs (stored in cell O4) appears. If the task is just beginning (...O12-7>L14...) or ending (...M14>O12...), a series of hyphens (stored in cell O3) appears.

When you first create the template, the chart area displays lines of hyphens. The spreadsheet considers all task starting dates to be "zero" which therefore fall within the first week. When you enter dates for a project and recalculate the spreadsheet, Section B displays an accurate chart.

Using the Template

Now you will use the template to plan a task. You will start by entering your data in Section A. Then you will copy the task-duration formulas in Section B. When you recalculate the worksheet, AppleWorks will create the Gantt chart in *Figure 1*. Follow these steps:

1. Load a copy of the PLANNER.TEMPL to the desktop. Change its name to PLANNER.EX.
2. In Section A, enter the project title and the starting and completion dates from *Figure 1*.
3. Enter the participant names, task names, task starting dates, and durations from cells B14 through J17 in *Figure 1*. Press Apple-K to recalculate the spreadsheet.

4. If you used the @ALERT function as described in the accompanying sidebar, try entering a task starting date that precedes the project's starting date. Then try a task ending date that comes after the project's completion date.
5. If you want to track additional participants and tasks, put the cursor in any cell in row 17 and use the Apple-C command to make as many copies of the row as you need. Then enter the new participants, their tasks, dates, and durations.

Producing the Chart

The Gantt chart will begin in column O and extend as far to the right as there are weeks in the project. Before AppleWorks can display the chart, you must

How to Use @ALERT

AppleWorks 4's new @ALERT function lets you warn users if data exceed the limits you can accept in your entries. For instance, you can use @ALERT in the PLANNER. TEMPL worksheet to warn users that a task initiation or completion date falls outside the project's date range (see *Figure A*).

@ALERT follows this syntax:

@ALERT("This warning appears on the screen.")

which displays "This warning appears on the screen." in an alert box in your spreadsheet. Try it by entering the formula in a new spreadsheet.

You always use @ALERT as part of a larger formula, generally in conjunction with an @IF function. For example, the formula **@IF(B10<0,@ALERT("Your entry is less than zero!"),"")** entered in any cell in your spreadsheet will display a warning message if the user enters a number less than zero in cell B10.

Try experimenting with the @ALERT function by following these steps. Then continue with the "Protecting the Worksheet" section in the accompanying article:

1. Enter the following formula in cell A40:

@IF(@AND(L12>L14,H14>1903),@ALERT("IS THIS TOO EARLY?"),"")

2. Enter the following formula in cell B40:

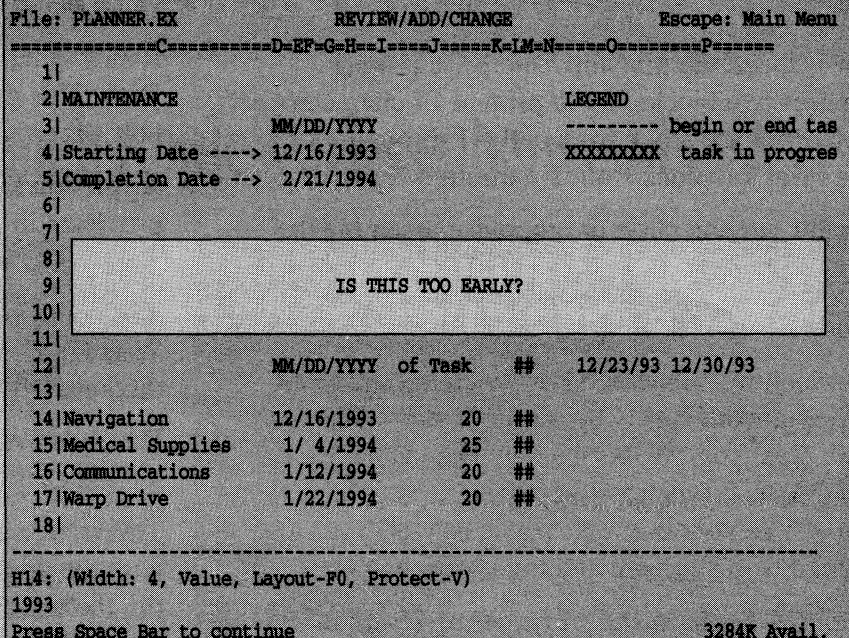
@IF(@AND(M12<M14,J14>0),@ALERT("TASK EXTENDS PAST DEADLINE."),"")

copy the formulas in cells O14, O15, O16, and O17 as far to the right as dates appear in row 12. (If you added more participants in step #5, you also have to copy the formulas to the right of any newly created tasks as well.) Follow these steps to copy the formulas:

1. Press Apple-C to copy cell O14 "Within worksheet" to the right as far as required for the project's duration. Respond "yes" to the "Protected cells" warning.

Make all references to cell O12 "Relative".
Make all other references "No change".

Figure A: Displaying an Alert



3. Copy "Within worksheet" cell A40 to cells A41 through A43. Choose "No change", "Relative", and "Relative" at the prompts.
4. Copy "Within worksheet" cell B40 to cells B41 through B43. Choose "No change", "Relative", and "Relative" at the prompts.
5. Use Apple-V to change recalculation "Frequency" to "Automatic".

Now AppleWorks will warn you if you enter a date before the starting date for the project or include a task that will extend past the end of the project.

2. Repeat step #1 for each remaining task.
3. Press Apple-K to recalculate the worksheet and display the chart.
4. Save the results to disk.

Printing the Spreadsheet

The data entry area in Section A fits on a single piece of paper, but the Gantt chart for a given project can easily exceed the width of your page. For example, to produce a full year project, you will have to print and tape together five pieces of paper. Shorter projects require fewer pages.

My Favorite Template...

If you tell AppleWorks to print the entire spreadsheet, AppleWorks will print extra blank pages. To conserve paper, you can print the spreadsheet as a series of "blocks" that you tape together. The number of blocks you print depends on the size of your spreadsheet; the Starship Enterprise project requires two blocks if you print at 17 characters per inch. Print the block from cell A1 through T17. The print the block from U1 through X17.

Finally, cut and paste or otherwise assemble the chart's sections.

Conclusion

This month you learned how to create a project planning worksheet with AppleWorks 4. The template uses AppleWorks 4's new Date value format and @DATE function to generate Gantt charts that you can view or print. Now you can use your template to help you plan and track your tasks. ■

[Stan Hecker is on the administrative staff at Michigan State University, East Lansing, Michigan, and is a partner in H&H Consulting, a Michigan concern specializing in school district financing and population analyses.]

[Ed: A working copy of this template appears on this month's issue of NAUG on Disk which costs \$10 from NAUG. NAUG on Disk requires a 3.5-inch disk drive; the template requires AppleWorks 4. Back issues of AppleWorks Forum cost \$4 per issue postpaid from NAUG.]

Public Domain Update

New Disks in the NAUG Library

AppleWorks 4.02 Updater

NAUG's Public Domain Library now includes Randy Brandt's new AppleWorks 4.02 Updater Disk. This menu-driven disk contains three valuable programs that enhance AppleWorks 4.01:

AppleWorks 4.02 Maker: Fixes 20 bugs and other problems in AppleWorks 4.01. Updates AppleWorks 4.01 to version 4.02.

TO.Thesaurus Autocopy Patch: Modifies AppleWorks 4.02 so you can load the TimeOut Thesaurus dictionary onto a RAM disk.

Randy's Free Patcher (v.1.1): Fifteen patches that let you customize AppleWorks 4.02.

This is an easy-to-use disk; you boot your system with the disk and follow the on-screen directions to run the three patching programs that enhance AppleWorks. After you are done patching AppleWorks, we suggest that you explore the disk; it also contains a new version of the TimeOut Updater, a file that demonstrates how to use the mail merge capability of AppleWorks 4 to fill in pre-printed forms, and a complete copy of the TimeOut Paint manual.


The AppleWorks 4.02 Updater, which is currently available only on 3.5-inch disks, costs \$6 plus \$2 s/h per order from NAUG.

Our thanks to Randy Brandt and Quality Computers for donating this disk to the NAUG library.

How to Get Disks

Unless otherwise noted, all disks are available in both 5.25-inch (\$4) and 3.5-inch (\$6) format, plus \$2 s/h per order. Order from: Public Domain Library, NAUG, Box 87453, Canton, Michigan 48187; (313) 454-1115; Fax: (313) 454-1965. NAUG accepts Visa and MasterCard.

All NAUG disks (except system disks provided by Apple Computer) are also available for downloading from NAUG's electronic bulletin board (the Electronic Forum), and from the NAUG areas on CompuServe, America Online, and GENIE. ■



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How to Get Help with Utilities

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New Disks in the NAUG Library

Barrows' Utilities – Disk 12

Roy Barrows recently contributed his twelfth disk filled with AppleWorks 3.0 utilities to the NAUG Public Domain Library. Barrows' Utilities – Disk 12 includes: **Add.Files.2** (Makes it easy to add files to the desktop.), **Clip.Edit** (Lets you view and edit the contents of the clipboard.), **Data.Wrap.2** (Adds word wrap to the AppleWorks data base module.), **DateCalc** (Calculates the number of days between any two dates.), **FileInfo** (Displays a pop-up window with the size, type, and other information about the active file on your desktop.), **Function.SP** (Displays a pop-up glossary of AppleWorks functions that you can paste into a spreadsheet formula.), **Lady.Luck** (Selects random numbers for lotteries and student grades.), **Layout** (Creates page layouts without using printer commands.), **Macro.Maker** (A "dummy" macro set that lets UltraMacros users with large default macro sets create and save keyboard macros.), **Multi.Clip** (Provides nine small clipboards for the word processor module.), and **SpellTools** (A menu-driven utility that automates the spell checker.).

Barrows' Utilities – Disk 12 includes both TimeOut and task file versions of each utility, word processor files with annotated copies of the macros, and documentation in AppleWorks word processor files on the disk. You need AppleWorks 3.0 enhanced with TimeOut to use these utilities. AppleWorks 3.0 users who own UltraMacros 3.1 can also explore and modify the macros on this disk. The utilities are not compatible with AppleWorks 4.

Barrows' Utilities – Disk 12 also includes **Macros Tools** (A macro programming utility that contains code that emulates various UltraMacros 4.x dot commands.), **Cal.DB** (An AppleWorks data base file that serves as a monthly calendar.), and **Peeks.3.1** (A data base file with the memory addresses and names for 66 different AppleWorks 3.0 variables.).

See page 28 of this issue of the *AppleWorks Forum* for information about ordering this disk. ■

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New Keywords: Bridge-It; Gantt charts; planning; @DATE; @ALERT; AppleWorks 4.02 Updater; linked files; UPS; United Parcel Service; date format

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